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ABSTRACT

Out of a factual description of the national demographic and economic context of higher education in general the authors offer interpretations for community colleges emphasizing three trends significant to educational planners: (1) Demographic pressure that made for increased enrollments in the past will dissipate at the traditional college-going age range, but continue at the somewhat older ages, when people are commonly drawn back to higher education, especially to community colleges; (2) since the present oversupply of college-educated persons is likely to persist for more than a few years, it is likely that the gap between the expected lifetime earnings of college and high school graduates will continue to narrow; and (3) in light of the high and rapidly rising costs associated with college attendance, it is reasonable to anticipate continued low rates of college enrollment compared with the late 1960's and, possibly, futher decline in these rates. (Author/JT)

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DEMOGRAPHIC AND ECONOMIC INFLUENCES ON THE GROWTH AND DECLINE OF HIGHER EDUCATION

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SUMMARY

Owing to a confluence of demographic and economic forces, higher education enjoyed a remarkable era of growth that peaked in the mid-1960s and ended abruptly early in the 1970s. This paper presents a factual description of the national demographic and economic context of higher education in general, and offers interpretations of what it portends specifically for community colleges. Rather than attempting to forecast the exact future course of the trends described, we seek to illuminate a number of contingencies to enable educational planners to adapt readily to what the future may bring. In looking to the future, we underscore three principal points.

First, owing to major swings in fertility following World War II, demographic pressure that made for increased enrollments in the past will dissipate at the traditional college-going age range, but continue at the somewhat older ages, when people are commonly drawn back to higher education, especially to community colleges. For the population 18 to 21 years of age, the immediate outlook is for a sharply reduced rate of growth compared with recent years and, eventually, decline. For the population 22 to 34 years of age, on the other hand, the outlook is for rapid expansion through the early 1980s, tapering off thereafter and followed by an era of decline commencing later in that decade.

Second, since the present oversupply of college-educated persons is likely to persist for more than a few years, it is likely that the gap between the expected lifetime earnings of college and high school graduates will continue to narrow.

Finally, in light of the high and rapidly rising costs associated with college attendance, it is reasonable to anticipate continued low rates of college enrollment compared with the late 1960s and, possibly, further decline in these rates.

DEMOGRAPHIC AND ECONOMIC INFLUENCES ON THE GROWTH AND DECLINE OF HIGHER EDUCATION*

by

Stephen J. Carroll and Peter A. Morrison

The Rand Corporation, Santa Monica, California

INTRODUCTION

Owing to a confluence of demographic and economic forces, higher education entered upon a remarkable era of growth in the nineteenth century that reached its peak in the mid-1960s. That era ended abruptly early in the 1970s as a new configuration of demographic and economic forces emerged from the old. The rate of growth in enrollments suddenly slackened, and the euphoria of the 1960s--when enrollments grew faster than in any previous decade since the Civil War--gave way to widespread concern for the "survival" of higher education.

Further growth of the higher education system is likely to be slow at best. Indeed, pressures making for contraction may intensify. Community colleges, however, occupy a distinctive position in the higher education system; the outlook for them is probably less bleak than it is for overall college enrollments. Nonetheless, they must formulate their future staffing and capital investment plans with a weather eye on the trends that affect higher education as a whole, and on the exceptional aspects of those trends as they affect the two-year-college sector.

In this chapter, we present a factual description of the national demographic and economic context of higher education, and offer interpretations of what it portends. We are not foolish enough to attempt to forecast the exact future course of the trends we describe; rather, we illuminate a number of contingencies to enable educational planners to adapt readily to what the future may bring.

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*Chapter prepared for a forthcoming monograph on community colleges. Views expressed in this paper are the authors' own, and are not necessarily shared by Rand or its research sponsors. We thank our Rand colleague Will Harriss for helpful comments.

PAST TRENDS IN ENROLLMENTS

In the century preceding 1970, enrollments in higher education grew steadily at an annual average rate of about 5 percent, regularly doubling every 14 or 15 years. The number of undergraduate degree-credit students increased from 52,000 in 1870 to nearly 7 million by 1970. After 1955, the enrollment growth rate accelerated and rose even more rapidly in the mid-1960s as the tidal wave of baby boom children surged out of high schools and into colleges and universities. Between 1955 and 1970, enrollments grew at an annual average rate of about 8 percent, corresponding to a doubling of enrollments every 9 years.

The 1970s ushered in a fundamentally new era. Between 1969 and 1974, degree-credit enrollments rose by only 19 percent, in contrast to the 60 percent growth experienced between 1964 and 1969. As the enrollment curve flattened, so did the growth of financial support, which had more than tripled during the 1960s. The number of institutions of higher education had doubled between 1940 and 1970, totaling more than 2700 in the latter year; of that increase, the growth of community colleges accounted for nearly two-thirds. By 1970, the 217 two-year institutions of 1940 had increased to about 1000 junior and community colleges, enrolling some 2 million students. Few new colleges and universities have opened since 1970; however, a number have closed their doors and many more appear to be on the brink of doing so.

An expanding population buoyed up and carried along the growth of the higher education system. But rapid increases in enrollment rates, largely stimulated by economic forces, lent even more impetus. Although the population of the United States approximately quintupled between 1870 and 1970, population growth alone accounts for less than one-third of the growth in enrollments for seven of the past ten decades. Table 1 summarizes the influences of population growth and rising enrollment rates during the past century.

Table 1

UNDERGRADUATE DEGREE-CREDIT ENROLLMENT

Year	Number (in thousands)	Percentage Change	Percent of Increase Attributable to: Change in 18-to-21-Year-Old Population	Change in Enrollment Rate
1870	52	-	-	-
1880	116	122	30	70
1890	154	33	65	35
1900	232	50	29	71
1910	346	49	34	66
1920	582	68	10	90
1930	1,053	81	25	75
1940	1,388	32	26	74
1950	2,422	74	0	100
1960	3,227	33	19	81
1970	6,840	112	45	55

SOURCE: Carnegie Commission on Higher Education, New Students and New Places, McGraw-Hill, New York, 1971, p. 127.

DEMOGRAPHIC CONTEXT OF HIGHER EDUCATION

Three aspects of recent demographic change bear on current enrollment patterns in higher education and the outlook for the future: (1) the widely varying size of cohorts born since the late 1940s; (2) the pattern of childspacing during the same period; (3) age-selective migration.*

Changing Size of Birth Cohorts

The central feature of the demographic context is the roller-coaster curve of the birth rate over the past three decades. The baby boom saw births increase from 2.9 million in 1945 to annual levels of 3.6 to 4.3 million

*For a more detailed analysis of these demographic trends, see Peter A. Morrison, The Demographic Context of Educational Policy Planning, The Rand Corporation, P-5592, February 1976, from which this section is drawn.

between 1947 and 1966. Thereafter, fertility measures began to decline sharply, signaling the onset of a baby bust, and by the early 1970s births numbered only 3.1 to 3.2 million annually. This absolute decline was especially surprising in view of the rapidly increasing number of potential mothers in the population (members of the initial baby boom cohorts who, by the late 1960s, were well into the years of childbearing). For example, although there were close to 900,000 more women of childbearing age in 1972 than in 1971, there were 300,000 fewer births.

The term "peristalsis"--the spasmodic process by which a python swallows a pig--is an apt metaphor for how the United States is absorbing the baby boom and bust. The most apparent feature of the population's age distribution is the baby boom bulge (persons aged 10 to 28 in 1975) moving through successive age boundaries (see Fig. 1). The leading edge of this bulge--persons now in their late twenties--crowded the nation's elementary schools in the early 1950s and moved on to crowd the secondary schools in the early 1960s. Colleges and universities were then overrun by 18-year-olds in the mid-1960s.

Recently plummeting birth rates have left a relative dearth of children under about ten years of age. For every 100 children under five years old in 1965, there were only 78 in 1975. This shrinkage began to affect elementary schools in the late 1960s and the secondary schools in the mid-1970s. Beginning in the early 1980s, the numbers of persons in the traditional college-going age range (18 to 21) will diminish and continue to shrink through the mid-1990s (see Table 2). The population aged 22 to 34 will continue to increase sharply through about 1980, but its growth will have ceased by the 1990s.

Closer Spacing of Births

Although the baby boom and bust are common knowledge, another fertility-related influence is little recognized and its implications have scarcely been examined. This influence results from the schedule of post-1950 childbearing, which was marked by a high fertility level and closely spaced births. With these cohorts now maturing to college age, that schedule is manifesting itself in a "sibling squeeze"--a rising incidence of families that have several children within the college ages at the

Figure 1

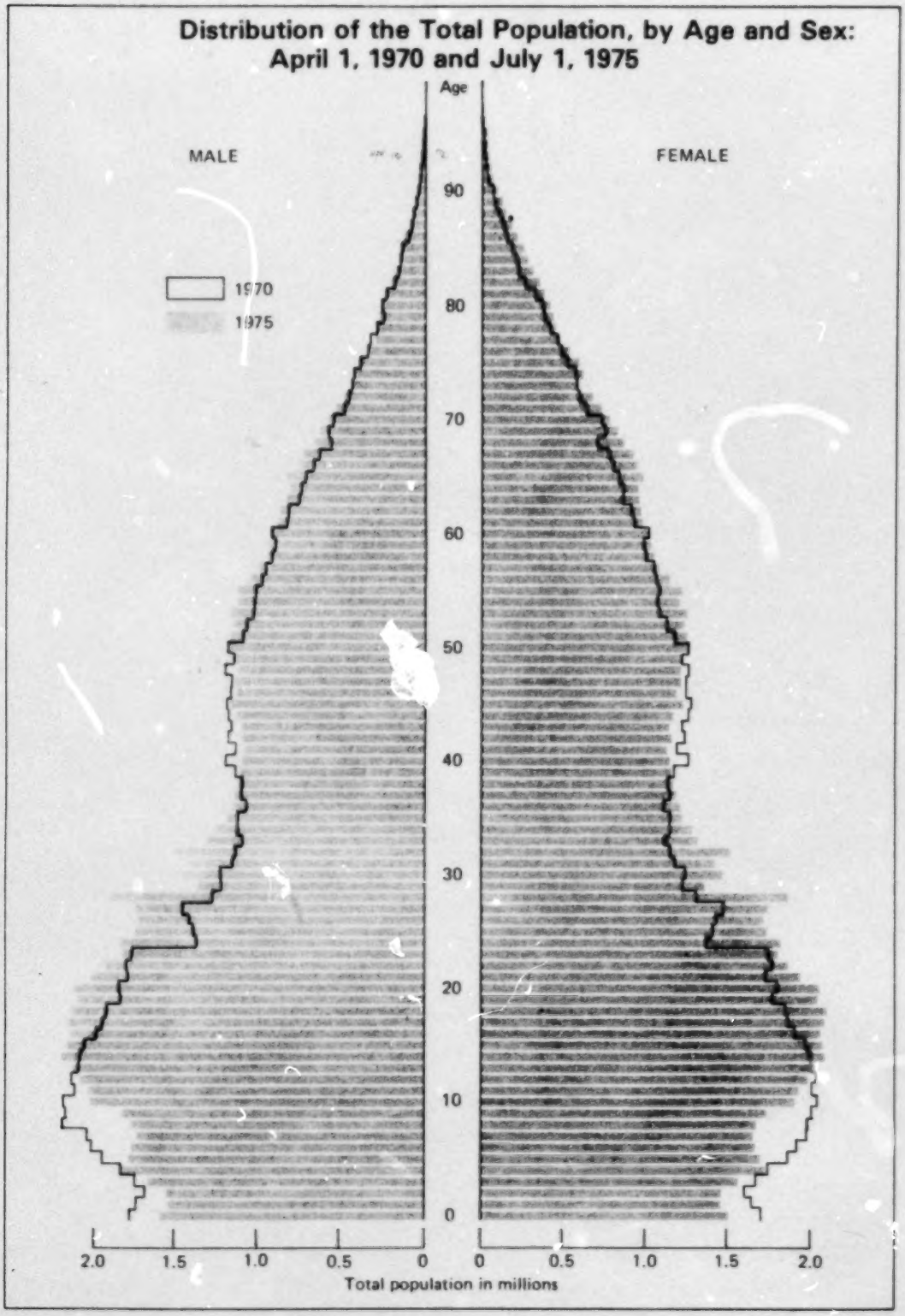
Distribution of the Total Population, by Age and Sex:
April 1, 1970 and July 1, 1975
Age
MALE
FEMALE
1970
1975
90
80
70
60
50
40
30
20
10
0
2.0
1.5
1.0
0.5
0
0
0.5
1.0
1.5
2.0
Total population in millions

Table 2

POPULATION AND PERCENT CHANGE IN SELECTED AGE GROUPS, 1960-1975, AND PROJECTIONS 1980-2000[a]

Year	Population (in thousands)			Percent Change Since Previous Year		
	18-21	22-34	35+	18-21	22-34	35+
1960	9,555	29,492	77,099	-	-	-
1965	12,204	30,554	81,814	28	4	6
1970	14,705	35,271	85,201	20	15	4
1975	16,479	42,024	88,673	12	19	4
1980	17,097	48,501	93,912	4	15	6
1985	15,431	52,249	101,834	-10	8	8
1990	14,519	51,705	111,170	-6	-1	9
1995	13,399	48,390	121,428	-8	-6	9
2000	16,002	44,819	130,594	19	-7	8

SOURCE: U.S. Bureau of the Census, Current Population Reports, Series P-25, No. 519, April 1974, Table 1; Series P-25, No. 541, February 1975, Table 2.

[a]Census Series II projection, which assumes an ultimate completed cohort fertility rate of 2.1 births per average woman.

same time.* For families of a given size, closely spaced births in the late 1950s now mean that the economic burden of a college education for several children is compressed into a comparatively short span of time.

Imagine a family with three children born in 1955, 1957, and 1959 who will enter college in 1973, 1975, and 1977. Between 1973 and 1980, the family must meet 12 years' worth of college fees in only eight years, as shown in the following diagram:

*Among whites, for example, only 28 percent of second children born between 1945 and 1949 (who would be prospective college freshmen during 1963-1967) were born within 24 months of the older sibling; ten years later, this figure had climbed to 40 percent (for those who would be prospective freshmen during 1973-1977). The percentages for blacks parallel those for whites, only at a somewhat higher level.

Date	Oldest Child	Middle Child	Youngest Child
1973	X		
1974	X		
1975	X	X	
1976	X	X	
1977		X	X
1978		X	X
1979			X
1980			X

The first double-payment years of 1975 and 1976 are likely to impose an extraordinary drain on the family's resources and, although it may manage with some difficulty, the third double-payment year (1977) becomes a crucial point of decision. The middle sibling, half-way through college, intends to continue. But what about the youngest child, a prospective freshman? Over the previous two years, savings have dwindled, perhaps faster than had been expected, and the family's economic ability to handle two more double-payment years is very much in doubt. A difficult choice arises: whether to absorb the expense of six more years of college within a four-year period, or to ease the burden by completing the middle sibling's education and cutting the youngest off at the pockets. This harbinger of things to come will force at least some families to reconsider the abstract advantages of a four-year college education for the youngest child at a time of concrete economic need. The result may be a shift from a high-tuition private to a low-tuition public institution, from a four-year to a two-year institution, or simply less encouragement to attend college at all.

This disturbing fable is almost entirely speculative, of course, since we lack data on how families actually react to the pressures of a sibling squeeze. (It has been shown, however, that children in large families receive less encouragement to become educated.) But for families with second and third children currently reaching college age, there can be no doubt that the pressures are real and will intensify through the early 1980s. Children at or nearing college age are more densely spaced within families than they were a decade ago. Moreover, this demographic compression

has been most intense for black and lower-income white families. The compression pattern will persist until the children born after 1965 (who are separated from their siblings by somewhat longer birth intervals) begin to reach college age.

This subtle demographic influence has crept up unannounced. It may be giving rise to certain vulnerabilities for children of larger families, and it may be detectable only in aggregate patterns of their college attendance. If that is so, the sibling squeeze surely worsens preexisting inequities associated with race and income. It may be that some younger siblings are deterred from attending college; perhaps they are being deflected away from four-year colleges and toward two-year colleges.

Age-Selective Population Movements

With the decline in the birth rate, differential growth patterns between one locale and another depend heavily on migration, which is a highly selective process. Migrants consist largely of young adults aged 18 to 35; an influx of new residents thus adds disproportionate numbers of prospective full- or part-time college attendees. An example of how migratory growth alters local age structure can be seen by contrasting San Jose, California, and Buffalo, New York--two metropolitan areas nearly identical in size in 1970. While San Jose's population more than tripled between 1950 and 1970, mostly because of migration, Buffalo experienced substantial net out-migration. Their age distributions reflect their different growth patterns: 37 percent of San Jose's 1970 population was in the 20 to 44 age bracket, compared with only 30 percent of Buffalo's.

Although the effect of age-selective migration is rarely very pronounced, disproportionate demand for higher education can be anticipated in certain rapid-growth regions--states like Florida, Nevada, and Arizona, or metropolitan centers like Orlando, San Jose, and Phoenix. The greater proportion of younger adults could mean levels of demand for higher education significantly higher than would be predicted by the absolute size of the local population. Conversely, unexpectedly low levels of demand are likely to be experienced in slow-growing and declining regions and metropolitan centers.

The effects of these patterns are likely to be especially sharp for the locally oriented community college sector.

ECONOMIC CONTEXT OF HIGHER EDUCATION

During the 1950s and 1960s, economic factors and public policies conspired to maintain a high rate of return to college attendance and to stimulate ever-increasing enrollment rates. By the early 1970s, however, labor markets had become inundated by college-educated workers, giving rise to a quite different configuration of economic forces. Below, we briefly review the economic context of higher education prior to 1970. We then discuss some of the contemporary consequences of that experience and its economic aftermath.

Pre-1970 Context

The post-World War II era of rapid economic growth was accompanied by even more rapid increases in the demand for college-educated workers. In the private sector, growth was concentrated in the professions and in such industries as finance, insurance, chemicals, petroleum, electronics, and aircraft, whose workforce had traditionally accounted for a disproportionately large share of the jobs filled by college graduates. The expansion of demand for college-educated workers was equally vigorous in the public sector. The federal bureaucracy (which now employs 1 in 6 male college graduates) and state and local government (also large employers of college-educated manpower) grew rapidly in the postwar era. Of special importance was the growth of elementary and secondary education, itself propelled by the baby boom. The percentage of all jobs that were professional or managerial (an index of the demand for college-level manpower) rose from 18 in 1950 to 24 by 1969.*

To a considerable extent, the higher education system fed on itself. Its rapid expansion demanded more college faculty, thereby stimulating expansion of postgraduate education. During the 1960s, many college graduates were channeled into postgraduate schools rather than directly

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*Richard Freeman, "The Declining Economic Value of Higher Education and the American Social System," paper presented at a conference on Education in a Changing Society, Aspen Institute for Humanistic Studies, June 1975, p. 13.

into the labor force; that trend was so marked that the proportion of college graduates among all new labor-force entrants actually declined. In effect, large numbers of college graduates were in a postgraduate "holding pattern."

Also, there was a growing tendency for employers to seek college-trained people for jobs that really did not require higher education. A college education provided an employer with evidence of the employee's stability, reliability, and talent. It also lent a certain prestige to the employer.

While these factors combined to maintain a high level of benefits accruing to college graduates, economic factors and public policy decisions combined to ease the economic burdens of going to college. A growing gross national product was translated into rising family incomes: more and more families could afford the costs of room and board, tuition, fees, and books (direct costs) and the forgone income of the college-goer (opportunity costs) associated with college attendance.

Federal and state governments have profoundly affected the possibilities (and aspirations) for higher education by providing student financial aid and subsidized public higher education. Apart from the G.I. Bill, federal efforts began in 1958 with the National Defense Education Act (which authorized low-interest loans to students) and have consistently expanded since then. College Work-Study was added in 1964, and Educational Opportunity Grants and Guaranteed Student Loans in 1965. In 1972, Basic Educational Opportunity Grants and State Scholarship Incentive Grants became available. Growth of state support for higher education has been even more impressive. According to one report, state appropriations for the collegiate sector nearly quadrupled between 1962 and 1971. In the latter year, state and local governments contributed about $9.3 billion, nearly one-third of total higher education revenues from all sources, including research support.

A particularly important facet of state higher educational support is the emergence, during the 1960s, of extensive two-year college systems in most of the populous states. Tuition in these institutions is generally low or nonexistent, and admission is generally quite open. Low-cost, nearby, relatively open higher educational institutions have been made available to an ever-increasing proportion of the nation's high school graduates.

Contemporary Consequences

This constellation of forces in operation prior to the 1970s gave rise to a highly unstable pattern of events that simply could not be continued. The persistent high level of demand for college graduates had combined with easier access to higher education to spur enrollment rates throughout the 1950s and 1960s. The pressure of the draft and the civil rights movement, which stimulated enrollments among the black population, had reinforced the upward trend in enrollment rates. Finally, the 18-to-21-year-old population was expanding rapidly. The joint product of these forces was an explosive increase in the annual numbers of college graduates. About 388,000 people won bachelor's degrees in 1962, about 558,000 in 1967, and over 876,000 in 1972--a 125 percent increase over the comparable figure only a decade earlier.

By the early 1970s, successively larger ranks of new college graduates brought their diplomas to the labor force each year. Moreover, the higher educational attainment of younger cohorts (see Table 3) meant that a substantially larger percentage of new labor force entrants than of the total labor force was college educated. Unfortunately, the sharp increases in the percentage of college graduates among new labor force entrants was not matched by the numerical growth of high-level positions in the labor market. The long-term upward trend in the ratio of the kinds of jobs college graduates traditionally entered to total jobs leveled off. In 1969, for example, 12.6 percent of the workforce was college-educated while 24 percent of all jobs were professional or managerial, implying a ratio of college-level jobs to college-educated workers of 1.9. As a result of the flood of new graduates into the labor market, college-educated workers accounted for 15 percent of the workforce in 1974, producing a ratio of 1.6 college-level jobs per college-educated worker.

Labor markets soon were swamped with college-educated job-seekers. Salaries of new college graduates declined relative to those of other workers, and substantial proportions of college-educated workers began to enter what had been regarded as lower-status occupations. Between 1961 and 1969, the real earnings (adjusted for changes in the consumer price index) of new college graduates increased 2 to 4 percent annually. In contrast, the real earnings of year-round full-time workers in general grew

Table 3

EDUCATIONAL ATTAINMENT: 1972

Age Group	Number of Persons Completing 4 or More Years of College (000's)	Percent Completing 4 or More Years of College
25 to 29 years	2,744	19.0
30 to 34 years	1,992	16.5
35 to 44 years	3,108	13.7
45 to 54 years	2,481	10.7
55 to 64 years	1,661	9.8
65 and older	1,381	6.9

about 2 percent annually. Between 1969 and 1974, however, the earnings of new college graduates failed to keep pace with inflation, declining in real terms by 2 to 5 percent annually, while the real earnings of workers in general were essentially unchanged. During the first half of the 1970s the real earnings of new college graduates fell by 11 to 25 percent, depending on field and degree.*

This decline in the relative earnings and labor market opportunities of college graduates is reflected today in a sharply reduced economic rate of return to college attendance--that is, the gap between expected lifetime earnings of college and high school graduates. Between 1959 and 1969, the rate of return to college hovered at about 11 percent. By 1974, it had fallen to 8.5 percent, a 23 percent decline in only five years.**

The declining economic value of a college degree has had a decided effect on the rate at which males have enrolled in college. Between 1969 and 1974, the enrollment rates of 18-to-19-year-old males fell from 44 to 33 percent; for 20-to-21-year-old males, it fell from 45 to 34 percent.***

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*Ibid., p. 7.

**Idem, "Overinvestment in College Training," Journal of Human Resources, Summer 1975.

***U.S. Bureau of the Census, Current Population Reports, Series P-20, No. 206, October 1970; No. 286, November 1975.

Comparable changes for women were minimal. There was little change in the enrollment rates of older men and women over the same period.

FUTURE OUTLOOK

In this chapter we have described and interpreted certain trends in order to illuminate future contingencies. In looking to the future, we underscore three principal points.

First, owing to major swings in fertility following World War II, demographic pressure that made for increased enrollments in the past will dissipate at the traditional college-going age range, but continue at the somewhat older ages, when people are commonly drawn back to higher education, especially to community colleges. For the population 18 to 21 years of age, the immediate outlook is for a sharply reduced rate of growth compared with recent years and, eventually, decline. For the population 22 to 34 years of age, on the other hand, the outlook is for rapid expansion through the early 1980s, tapering off thereafter and followed by an era of decline commencing later in that decade.

Second, since the present oversupply of college-educated persons is likely to persist for more than a few years, it is likely that the gap between the expected lifetime earnings of college and high school graduates will continue to narrow.

Finally, in light of the high and rapidly rising costs associated with college attendance, it is reasonable to anticipate continued low rates of college enrollment compared with the late 1960s and, possibly, further decline in these rates.